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A guide to  
metric  
conversion for  
municipalities

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Metric Commission  
Canada

Commission du système  
métrique Canada

**A guide to  
metric  
conversion for  
municipalities**

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# "Canada's approach"

## **1.1 Government of Canada Policy**

The Government of Canada has stated its belief that the eventual adoption in Canadian usage of a single coherent measurement system based on metric units is inevitable and in the national interest. The White Paper on Metric Conversion of 1970 setting out the policy of the Government and the background for its decision was placed before Parliament and received unanimous endorsement.

## **1.2 Canada's Conversion Objectives**

- 1.2.1 Canada wants to make the change in a manner that will produce the greatest benefit to the Canadian economy.
- 1.2.2 In order to achieve this objective, the Government of Canada established Metric Commission Canada to coordinate and stimulate metric conversion throughout the economy. Metric Commission Canada has the objective of developing an overall national conversion plan. It wants to help each sector of Canadian society to make its own conversion plans and to monitor the progress it makes in implementing these plans.
- 1.2.3 The Commission's approach is designed to achieve this objective.

## **1.3 Program of Guideline Dates for Metric Conversion**

- 1.3.1 On 17 March 1975, the Federal Government sponsored in the House of Commons the following Program of Guideline Dates for Metric Conversion.
- 1.3.2 Metric Commission Canada has consulted with representative organizations in all sectors of the Canadian economy in respect to the manner in which conversion to the International System of metric units should proceed and as a result proposes the following Four Phase Program of Guideline Dates for Metric Conversion:

- An investigation phase, which should reach a peak during 1974, to determine what needs to be done in respect to metric conversion;
- A planning phase, which will extend during 1974 and 1975 to identify the sequence in which actions will be performed;
- A scheduling phase, during which the timing of these actions will be determined and co-ordinated and which is to be completed in 1976;
- An implementation phase, to commence in some volume in 1975, reaching a peak of activity in the period 1977-78 and be substantially completed by 1980 when metric measures will be used by Canadians for all normal commercial and legal purposes.

1.3.3 The Four Phases of Metric Conversion in Canada and sector progress are illustrated in the chart shown as Appendix I.

## **1.4 Metric Commission Canada's Approach**

### *Steering Committees and Coordination between Governments*

- 1.4.1.1 To perform its task the Commission has established 12 steering committees, each responsible for co-ordinating a group of economic sectors that have related interests. For example, Steering Committee No. 5 groups the following sectors: construction; non-metallic mineral products; structural and architectural metals; real estate, land surveyors and town planners; road design, construction and operations. Canadians working in all types of organizations sit on the various Steering Committees, representing the Canadian people and coordinating the conversion activities of all sectors of Canadian society.
- 1.4.1.2 In addition, there is an Interdepartmental Committee for Metric Conversion (ICMC) which is responsible for coordinating conversion within the Federal Government. This committee reports to the Commission in the same manner as the steering committees.
- 1.4.1.3 The structure of Metric Commission Canada in relation to the national economy is shown in the chart attached as Appendix II.
- 1.4.1.4 There is an Intergovernmental Metric Conversion Committee (IMCC) which brings together, under the Chairman of Metric Commission Canada, a designated metric conversion contact from each province and territory, a representative from the federal Interdepartmental Committee for Metric Conversion, and a representative of the Standards Council of Canada.
- 1.4.1.5 Further, with respect to the metric conversion of design and construction within Federal, Provincial, and Territorial Governments, there is an intergovernmental committee known as the Intergovernmental Design & Construction Committee on Metric Conversion (IDCC).
- 1.4.1.6 The Terms of Reference of the IDCC are annexed as Appendix III.
- 1.4.1.7 The steering committees have the task of co-ordinating the plans of the different sectors and submitting them to the Commission. The Commission and its permanent staff in Ottawa coordinates all sector plans and integrates them to form the overall program for the economy.

- 1.4.2 **Sector Committees**
- 1.4.2.1 The Commission has established 100 sector committees which report to the steering committees. Each is responsible for a particular industry, group of industries or interests. These sector committees are preparing the *sector plans* for converting the sector for which they are responsible. They are doing this in collaboration with the individual firms and individual associations. Examples of such committees are the sector committee for construction, and the sector committee for the iron and steel mills and foundries.
- 1.4.2.2 The ongoing task of the steering committees and their sector committees is to monitor the progress of conversion and suggest any necessary modifications to plans in order to meet changing conditions.
- 1.4.2.3 The designation of the various sector committees as of 29 July 1977 is shown in the chart attached as Appendix IV.
- 1.4.3 **Sector Plan**
- 1.4.3.1 The sector plan document contains all the elements of the sector plan for a given sector of the Canadian economy. It lists the various activities and events involved and clearly indicates *who will do what* and *when* they should do it to stay within the overall conversion schedule of the sector.
- 1.4.3.2 The elements of the sector plan are:
- (a) A *Plan Description* with associated appendices which describes what the sector comprises, its approach to conversion, its objectives, policy strategy, assumptions and the nature of any constraints or dependencies. It also contains a guideline for use of the plan by individual organizations.
  - (b) An *Activity Breakdown* which identifies the activities in the sector plan by major activity areas.
  - (c) An *Activity List* and associated *Activity Descriptions* which explain the nature of the activities to be carried out, giving their objectives and outlining the work involved.
  - (d) A *Network Diagram* showing the logical relationship between the various activities required to achieve conversion, who is responsible for their execution, their estimated timing and duration.
  - (e) A *Bar Chart* derived from the Network Diagram, summarizing the time span covered by the major activity areas and identifying various key events in the conversion process.
- 1.4.3.3 In certain cases the Plan Description may contain additional material such as lists of standards to be converted and their associated conversion dates, lists of products whose availability may constrain conversion of the sector, or other material considered relevant to those planning conversion.
- 1.4.3.4 A "Model of Sector Activity Breakdown" is annexed as Appendix V.
- 1.4.3.5 The status of the conversion plans for the various sector committees as at 29 July 1977 is shown in the chart attached as Appendix VI.
- 1.4.3.6 All provinces and territories have appointed designated Metric Conversion Contacts to liaise with Metric Commission Canada and to receive and submit to their various departments for review draft copies of all sector plans before approval. In this way, those provincial departments having jurisdiction or liaison with the various municipalities attempt to ensure that the needs of the municipalities are taken into consideration in the planning process.
- 1.4.3.7 In addition, after publication of a sector plan by Metric Commission Canada, wide distribution is given to a leaflet which provides a summary of the plan. For many people this leaflet may provide sufficient information about the sector plan and the key events in it.
- 1.4.3.8 The organization chart of Metric Commission Canada, together with telephone numbers of sector plan managers to contact if further information is required concerning sector plans, is annexed as Appendix VII.
- 1.4.4 **Individual Firms and Organizations**
- 1.4.4.1 These sector plans are guides for the individual firms and organizations concerned and they represent the best judgement of the industry on how to go about the process of conversion.
- 1.4.4.2 Since individual firms and public service organizations are the entities that are implementing metric conversion, it is clear that they have a major role to play in the national conversion process.
- 1.4.5 **Canada-United States Liaison**
- 1.4.5.1 Close co-operation is maintained between the American National Metric Council and Metric Commission Canada and action is taken by these two organizations to exchange representation and data between equivalent sector committees.

## Primary areas of municipal involvement

2.1

The primary areas of municipal involvement in metric conversion would be, but not necessarily in the order given:

- Surveys and mapping for all municipal purposes
- Design for, and construction of public works
- Roads and streets
- Documents, records, reports, “in-house” standard publications, administration forms
- Building codes and building inspection
- Equipment and supplies of all kinds
- Legislation (Municipal By-Laws and Regulations)
- Fire and police protection
- Public health and safety
- Recreation, etc.

## The first decision – appointment of your metric conversion officer

3.1

### Policy

Municipal Councils should adopt policy to:

- (a) Encourage metric conversion within the municipality.
- (b) Establish a four phase program of guideline dates for the metric conversion of all municipal departments, boards and commissions.
- (c) Develop procedures to answer public enquiries.
- (d) Organize a *Municipal Metric Committee* comprising a staff member from each municipal department, board and commission.
- (e) Require each municipal department, board and commission to establish its individual metric committee, which in turn should report to the *Municipal Metric Committee* through its representative on that committee.

3.2

### Appoint Metric Coordinator

Where they have not done so, municipalities should now appoint a *Metric Coordinator*, who should immediately list all measurement-sensitive by-laws and other regional or municipal legislation that require amendment. He would work in close liaison with the municipal *legal department* or *solicitor*. More than anything else, he is responsible for preparing an investigation report formulating a *Metric Conversion Plan*, checking its scheduling with sector plans relevant to the needs of the municipality, and for co-ordinating its implementation.

3.2.2

It is critical for the success of this coordinator and the entire municipal conversion program that the decision to appoint him be *made and announced by the Mayor, Reeve or equivalent Chief Executive Officer*.

3.3

### Municipal Metric Committee

To be effective a Municipal Metric Coordinator should:

- (a) Have knowledge of the fundamental principles of *public administration* at the municipal level.
- (b) Be authorized to form the *Municipal Metric Committee* according to guidelines established by the Municipal Council.
- (c) Be solely responsible to the Municipal Council for the effective functioning of the Municipal Metric Committee.
- (d) Act as the Council’s metric officer in liaison with senior governments when such liaison is necessary in such matters as:
  - Methods of handling municipal conversion training.

- Appropriate channels for disseminating metric information.
  - Nature and extent of assistance which could be, or should be offered to the municipality with respect to metric conversion.
  - Conversion of municipal by-laws being inhibited by the extent provincial legislation authorizing the by-laws has been converted.
  - In cases of this nature the *Metric Coordinator* and the *Municipal Legal Department* should act jointly in advising the provincial department having jurisdiction of difficulties encountered, and press for early decisions and enactment of the required legislation.
- 3.4 Attached as Appendix VIII are typical terms of reference as derived by Metric Commission Canada for an Industry Metric Conversion Officer. These terms of reference can with local modifications be a useful guide to the Municipal Metric Co-ordinator.
- 3.5 Attached as Appendix IX is a chart suggesting the organization for *Municipal Metric Conversion*. This municipal organization is purely hypothetical, yet it is believed it illustrates the possible functions of municipal government, irrespective of size.
- 3.6 In any municipality there are many activities and items to be converted. In many cases there will be a "soft", or exact conversion (e.g. the distances in existing property deeds). In other cases agreement must be reached for rational dimensions requiring a "hard conversion" (e.g. a 66-foot road allowance to a 20-metre road allowance). In many cases the metric change will be dictated by industry (e.g. concrete pipe sizes). In each case municipal participation in the decision is desirable.
- 3.7 If metric conversion in any municipality is to be effectively achieved, it must be a planned and coordinated action among all municipal departments. It is, therefore, imperative each department, regardless of physical size, scope of responsibility, etc., prepare for the change. Each department has to decide on the metric standards to be employed, the most appropriate SI units to be adopted, what by-laws and municipal regulations must be changed.
- 3.8 The measurement-sensitive clauses of the existing Federal, Provincial and Municipal legislation and statutory regulations will require enacted conversion to SI units of measurement.
  - 3.8.1 Municipalities should immediately review their current by-laws in force to determine the measurement-sensitive clauses they contain and determine the SI units to be used to convert the customary units now in the by-laws. This is an investigative exercise, predicated upon one of the most significant Government principles expressed in the January 1970 "White Paper on Metric Conversion in Canada", related to the new system of measurement which is:  
*"This single system should come to be used for all measurement purposes required under legislation, and generally accepted for all measurement purposes."*

## Public works and related liaison

<p><b>3.9 Suggested Terms of Reference for Municipal Departmental Metric Committees are:</b></p> <ul style="list-style-type: none"> <li>– Departmental Committees report through their chairman to the Municipal Metric Committee, of which the chairman of the Departmental Committee should be a member.</li> <li>– Discuss and agree upon SI units of measurement to be used by the Department.</li> <li>– Review standards used within the Department, and recommend to the Municipal Metric Committee priorities for the guidance of Standard Writing Organizations (e.g. CSA, CGSB, ULC, etc.).</li> <li>– Recommend priorities in amendments to by-laws, municipal regulations, municipal administrative directives affecting metric conversion within the Department.</li> <li>– Prepare estimates of time for key activities in a network plan.</li> <li>– Prepare an overall plan and timetable for conversion within their Department specifying assumptions as to time of availability of amended by-laws, municipal regulations, etc., or the readiness of the public to accept the change to SI with respect to the Department's daily operations.</li> <li>– Review assumptions made by the Departmental Committees with respect to amended by-laws, municipal regulations priorities of standard conversions, etc.</li> <li>– Revise departmental plan and timetable to conform with revisions made to their assumptions by other Departmental Committees or by the Municipal Metric Committee.</li> <li>– After plan and timetable have been approved, monitor progress within their Department</li> <li>– Act as a clearinghouse for enquiries and information concerning departmental metric activities and generally coordinate the work of metric conversion within their Department.</li> </ul>
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### 4.1 Public Works

- 4.1.1 It must be recognized that the function of this Department may be inhibited by the functions of other departments such as Roads and Streets; Sewer, Water Supply and Sanitation; Traffic; Public Utility; Building; Workshops and Garages, Surveying; etc. Therefore, close interdepartmental liaison will be required to reach a consensus with respect to preferred SI units, and possibly preferred metric dimensions of products.
- 4.1.2 The Department of Public Works should also give input to all inter-related departments and jointly review by-laws or regulations or both and make joint recommendations to the Municipal Metric Committee with regard to any metric conversion required.
- 4.1.3 An example of inter-related departmental interest could be the metric carrying capacity of sewers and water supply services which would be of interest to the Sewer, Water and Sanitation Department; Building Department; the Community Planning Department; the School Boards, etc.
- 4.1.4 Further, such public works as sewer and water installations are of vital interest to the Property Department, responsible for assessments related to local improvements, and the metric conversion plans of the Public Works Department would, therefore, be of considerable interest to the Property Department, and could greatly influence the metric conversion planning of the latter. In every case relevant sector plans and associated supplementary metric practice guides available from national association offices should be consulted.
- 4.1.5 The following summary, which is in no way conclusive, serves to illustrate the need for interdepartmental liaison by a Municipal Department of Public Works with the Departments, Board and Commissions to determine a consensus as to some of the preferred SI units and metric (SI) dimensions most likely to be of mutual interest. This summary is predicated upon the Suggested Organization for Municipal Metric Conversion (Appendix IX).

#### Roads & Streets Department

- Street widths in metres (m)
- Sidewalk widths in metres (m)
- Median strips, widths in metres (m)
- Location in metres (m) and capacity of catch basins in litres (L)
- Radii in metres (m) of horizontal curves of roads and walks.

### *Sewer, Water and Sanitation Department*

#### *(a) Sewers (Sanitary & Storm)*

- Pipe diameters, I.D. — in millimetres (mm)
- Pipe lengths — in metres (m)
- Gradient — millimetres per metre (mm/m)
- Flow rate in pipe — cubic metres per second ( $m^3/s$ ) or litres per second (L/s)
- Manhole diameters — in metres (m)
- Manhole depths — in metres (m)

#### *(b) Water Supply Mains*

- Pipe classification (pressure) — in kilopascals (kPa)
- Pipe lengths — in metres (m)
- Pipe diameters, I.D. — in millimetres (mm)
- Water main pressures — in kilopascals (kPa)
- Location of mains — in metres (m)
- Depth of bury — in metres (m)
- Reservoir or elevated tank storage capacity — in cubic metres ( $m^3$ ) or litres (L)
- Pumps capacity — in litres per second (L/s) against a head of n metres (m), where n equals a whole integer of vertical height
- Treatment plant — storage capacity in cubic metres ( $m^3$ ) or in litres (L).

#### *(c) Sewage Disposal*

- Septic tanks — capacities in cubic metres ( $m^3$ ) or litres (L)
- Imhoff tanks — capacities in cubic metres ( $m^3$ ) or litres (L)
- Digesters — capacities in cubic metres ( $m^3$ ) or litres (L)
- Oxidation Ponds (Lagoons) — depths in metres (m), areas in hectares (ha) or square metres ( $m^2$ ).

#### *(d) Waste Disposal*

- Incineration of refuse — heat of combustion required, ranging from  $420^\circ C$  to  $760^\circ C$
- Oxygen demand per kilogram (kg) of refuse burned ( $m^3/kg$ )
- Loading rate of refuse — kilogram per hour per square metre ( $kg/h.m^2$ )

- Landfill operations — depth of cover in millimetres (mm) or metres (m)
- Area of cover operations in square meters ( $m^2$ ) or hectares (ha)
- Volume in cubic metres ( $m^3$ )

### *Traffic Department*

- Widths of approaches to intersections in metres (m)
- Line marking of roadway and approach lanes — width in millimetres (mm)
- Locations of traffic signs and traffic lights in metres (m)

### *Public Utility Department*

- Location data of services in metres (m) or millimetres (mm)
- Heights of aerial cable and wire in metres (m) or millimetres (mm)
- Depth of bury of underground installations in metres (m) or millimetres (mm)
- Location data of valve chambers, manholes, buried junction boxes, etc., in metres (m) or millimetres (mm)

### *Building Department*

- Limits of building lines on unoccupied property parcels in metres (m) (zoning requirements) or millimetres (mm)
- Building lines on property parcels for which building permits have been issued in metres (m) or millimetres (mm)
- Surface parking lot requirements (line permits, access, etc.) in metres (m) or millimetres (mm)
- Location data for building service entrances for sewer, water, gas, overhead and buried electrical, in metres (m) or millimetres (mm).

### *Community Planning Department*

- Physical features of the Master Plan — in metres (m)
- Project boundary information — in metres (m)
- Municipal zoning plan indicating dimensions for building height limits, building set backs, sideyards, overhangs, etc. — in metres (m).

### *Parks and Recreation Department*

- Dimensions on plans for park boundaries; access roads, walks, etc. — in metres (m)
- Dimensions for recreation facilities such as playing fields, children's play areas, etc. — in metres (m)

### **Workshops, Garages**

- Building dimensions — in millimetres (mm) and metres (m) (Refer to CSA A31.M — Metric Dimensional Coordination in Building)
- Working Bays — dimensions in millimetres (mm) or metres (m)
- Parts Bins — dimensions in millimetres (mm)
- Hoists (chain) — capacities in metric tons, i.e. tonnes (t)
- Compressors (air) — Pressure ratings in kilo-pascals (kPa).

### **Surveying Department**

- All plans and surveying drawings, plane angles in sexagesimal system (circle =  $360^\circ$  of arc); linear measurements in metres (m); area measurements in square metres ( $m^2$ ) or hectares (ha); contour intervals in metres (m); elevations in metres (m); profiles and cross-sections in metres (m)
- Metric legal descriptions of property.

\*

\* Technical data quoted is illustrative only and should be verified with suppliers and designers.

### **4.2**

The summary (4.1.5) related to a Public Works Department should serve to indicate the need for inter-departmental liaison within the administration of a municipality.

### **4.3**

Other interdepartmental liaison could be:

– *Roads and Streets Department* — liaison could be with Sewer, Water and Sanitation, Traffic, Public Utility, Building, Community Planning, Parks and Recreation and Surveying Departments and possibly with Harbour, Transportation and Airport Commissions.

– *Sewer, Water and Sanitation Department* — liaison could be with Roads and Streets, Public Utility, Fire, Building, Community Planning, Parks and Recreation, Surveying, Property Departments and possibly with Harbour Commissions and the School Boards.

– *Traffic Department* — liaison could be with Legal, Roads and Streets, Public Utility, Police, Fire, Parks and Recreation, Community Planning, and Surveying Departments and possibly with Harbour, Airport and Transportation Commissions.

– *Public Utility Department* — liaison could be with Legal, Roads and Streets, Sewer, Water and Sanitation, Traffic, Police, Fire, Building, Community Planning, Property and Surveying Departments and possibly with Transportation, Harbour and Airport Commissions and School Boards, Workshops and Garages.

– *Police Department* — liaison could be with Legal, Roads and Streets, Traffic, Public Utility, Fire, Community Planning, Welfare and Health Departments and possibly with Transportation, Harbour and Airport Commissions, Workshops and Garages.

– *Fire Department* — liaison could be with Legal, Public Works, Traffic, Public Utility, Building, Community Planning Departments and with Harbour and Airport Commissions, Workshops and Garages.

- *Building Department* — liaison could be with Legal, Public Works, Roads and Streets, Sewer, Water and Sanitation, Public Utility, Police, Fire, Community Planning, Parks and Recreation, Property, Surveying Departments and with Harbour and Airport Commissions, School Boards, Workshops and Garages.
- *Community Planning Department* — liaison could be with Legal, Public Works, Roads and Streets, Sewer, Water and Sanitation, Traffic, Public Utility, Parks and Recreation, Fire, Police, Property, Health and Surveying Departments and with School Boards, Transportation, Harbour and Airport Commissions.
- *Parks and Recreation Department* — liaison could be with Public Works, Roads and Streets, Sewer, Water and Sanitation, Traffic, Public Utility, Police, Fire, Building, Community Planning and Surveying Departments. It is possible direct liaison with the Legal Department and Transportation Commission may also be necessary.
- *Welfare Department* — liaison could be with Public Works, Police, Fire, Building, Community Planning, Parks and Recreation and Health Departments, and possibly with School Boards and the Transportation Commission.
- *Health Department* — liaison could be with Legal, Public Works, Sewer, Water and Sanitation, Police, Fire, Community Planning and Welfare Departments and School Boards and possibly Harbour and Airport Commissions.
- *School Boards* — could liaise with Public Works, Roads and Streets, Sewer, Water and Sanitation, Traffic, Public Utility, Police, Fire, Building, Community Planning, Parks and Recreation, Health Departments and possibly with Workshops and Garages.

- *Transportation Commission* — could liaise with Legal, Public Works, Traffic, Police, Fire, Building, Community Planning, Parks and Recreation Departments, Workshops and Garages and possibly with School Boards and Harbour and Airport Commissions.

- *Harbour Commission* — could liaise with Legal, Public Works, Roads and Streets, Water and Sanitation, Traffic, Public Utility, Police, Fire, Building, Community Planning, Property, Workshops and Garages and Surveying Departments and possibly with Transportation Commission. It will be necessary to convert all quantities in tables and charts that are used as a basis for computing "users charges".

- |              |   |
|--------------|---|
| <b>4.4</b>   | <b>Hospital Boards or Commissions</b>   |
| <b>4.4.1</b> | Although the majority of Canadian hospitals have already converted to SI in the areas of medical treatment and patient care, there will possibly be a need for metric (SI) liaison with various departments at the municipal level. This need arises from the necessity for physical plant required to accommodate those in need of hospitalization for medical treatment and patient care. |
| <b>4.4.2</b> | Such metric (SI) interdepartmental liaison could possibly be with the Legal, Public Works, Roads and Streets, Sewer, Water and Sanitation, Traffic, Fire, Building, Community Planning, Welfare, Health Departments and possibly School Boards.   |

## Departmental terms of reference

- 5.1** Although considerable emphasis has been placed upon interdepartmental liaison with respect to municipal metric conversion, the success of such liaison is greatly dependent upon the investigation, planning, scheduling and implementation phases of the metric conversion program of individual municipal departments.
- 5.2** Each Municipal Department, Board and Commission will have to examine its operational functions and determine the measurement-sensitive areas which will require conversion to metric (SI).
- 5.3** **Terms of Reference Common to all Departments could be:**
- (a) Determine the extent of any necessary staff training resulting from the introduction of the SI system of measurement and add appropriate activities to the overall plan.
  - (b) Provide support as may be required to other Departments, Boards and Commissions as related to the work of your Department.
  - (c) Establish and maintain effective communications with other related groups and organizations.
- 5.4** **Terms of Reference for a Surveying Department Metric Conversion Committee could be:**
- (a) Investigate all areas likely to be affected and assess the impact of metric conversion on existing municipal records and procedures for surveying and mapping.
  - (b) Recommend metric surveying and mapping systems and standards for the municipality, including a geocoding system compatible with provincial systems, should such exist.
  - (c) Recommend or establish common metric standards for practices and equipment mutually suitable to the other Municipal Departments, Boards and Commissions.
  - (d) Determine other measurement-sensitive areas which could be converted or improved upon by conversion to the mutual benefit of the various other Departments, Boards and Commissions within the jurisdiction of the municipality.
  - (e) Plan, schedule and implement metric (SI) surveys, maps and plans within the municipal jurisdiction.
- 5.5** The Plan Summary and Bar Chart of Sector 5.05 (Real Estate, Land Surveyors and Town Planners) is attached as Appendix X.
- 5.6** **Terms of Reference for a Department of Public Works could be:**
- (a) Investigate all areas likely to be affected and assess the impact of metric conversion on engineering records and maintenance and operating procedures for existing municipal works within the municipality.
  - (b) Wherever feasible and possible, in conjunction with metric conversion, establish or recommend unified and up-to-date engineering standards and specifications for the design and construction of municipal works within the municipality.
  - (c) Plan, schedule and implement the SI system of measurement in design and construction standards from a specific date onwards.
  - (d) Become fully aware of the construction schedules of Sector 5.01 Construction and the Intergovernmental Design & Construction Committee (IDCC).
- 5.7** The Plan Summary and Bar Chart of Sector 5.01 (Construction) is attached as Appendix XI.
- 5.8** Although the Municipal Administrative Offices were not indicated on the chart — Suggested Organization for Municipal Metric Conversion (see Appendix IX) — such a department can not be overlooked as their functions are related to all Municipal Departments, Boards and Commissions.
- 5.8.1** **Terms of Reference for the Municipal Administrative Offices could be:**
- (a) Identify all measurement contained in reports, documents, standards, publications, forms, invoices which are prepared and issued by the municipality and examine the implications metric conversion would have on them.
  - (b) Determine the need for a Metric Standard Practice Manual to serve all Departments, Boards and Commissions within the municipal jurisdiction, as a guide for the publication of standards, on preferred format, metric usage, etc.

- 5.9** It is interesting to note that many of the provinces have adopted or are in the process of adopting within their jurisdictions uniform building standards based in whole or in part on the National Building Code of Canada.
- 5.9.1** With this move by provincial authorities towards the adoption of uniform, mandatory building codes modelled after the National Building Code, the need for more highly qualified building inspectors is becoming more evident.
- 5.9.2** The metric conversion process in any Municipal Building Department provides the unique opportunity for providing building inspectors with additional training.
- 5.9.3** *Terms of Reference for a Municipal Building Department could be:*
- (a) Study the impact of metric conversion on the administration of the municipal building codes, any by-laws and regulations relating to buildings and structures and on applicable reference standards.
  - (b) Assess the impact of the possible adoption of a mandatory Provincial Building Code.
  - (c) Assess the impact of the possible universal adoption of CSA Standard A31.M — Metric Dimensional Coordination in Building.
  - (d) Establish and maintain effective communications with other organizations and associations involved in the preparation of, or administration of, standards for buildings and structures beneficial to the municipality, generally.
  - (e) Prepare and implement a plan for the introduction of the SI system of measurement in respect to the foregoing items, keeping in mind the metric conversion of other Departments, Boards and Commissions.
  - (f) Consider the need and recommend an appropriate method for instructing the private sector on metric (SI) dimensioning of plans for building alterations, renovations, etc., for which building permits are usually required.
  - (g) Consider other items lying within the responsibility of this Department which would likely require metric conversion.

- 5.10** **Terms of Reference for a Municipal Purchasing & Stores Department could be:**
- (a) Assess the implications of introducing metric standard materials, equipment and supplies within the municipal jurisdiction.
  - (b) Prepare and maintain a listing of metric construction materials, supplies and equipment normally used by the municipality, including information as to source and availability for metric-sized equivalents.
  - (c) Assess the impact of metric conversion on existing inventories of materials, supplies and equipment; prepare and implement guidelines for the conversion or modification of existing equipment (vehicles, machines, instruments, tools, etc.) to the SI system of measurement.
  - (d) Examine the implications of maintaining, for prolonged periods, non-metric facilities and inventories. (This is a problem related to double inventories.)
- 5.11** Community or Municipal Planning Department functions are such that there is hardly another Municipal Department, Board or Commission that is not influenced one way or another by decisions reached by this Department, which could be also a Municipal Board, depending upon how it is constituted.
- 5.11.1** To establish Terms of Reference for the metric conversion of a Municipal Community Planning Department, technological, social and economical influences which govern the fundamental considerations and objectives of community planning must be taken into account.

**5.11.2 Terms of Reference for a Community Planning Department could be:**

- (a) Assess the impact of metric conversion on the municipal plan in respect to its physical dimensions, the mobility of its population and the future development of the area of the municipal plan.
- (b) Recommend a metric land plan to accommodate foreseeable future needs, redefining, if necessary, provision for future land needs.
- (c) Recommend a metric urban renewal plan.
- (d) Where feasible establish metric sub-division criteria.
- (e) Examine any other measurement-sensitive areas (zoning by-law) which can be implemented and/or improved to the mutual benefit of other Municipal Departments, Boards and Commissions in conjunction with metric conversion.
- (f) Plan, schedule and implement the use of the SI system of measurements on planning surveys, maps and plans for the municipality.

**5.12 In the conduct of its operations, a Municipal Police Department requires physical facilities for training, teletyping and communication, detention, security, patrol, investigation, court, parking, records and, possibly, a barracks where food, dining and medical attention are available. Each of these requirements is a measurement-sensitive area.**

**5.12.1 Terms of Reference for a Municipal Police Department could be:**

- (a) Assess the impact of metric conversion on existing procedures and records related to the identification of fugitives, prisoners and suspects; enforcement of traffic regulations related to vehicular speeds; investigation procedures related to investigation of vehicular accidents; movement of vehicles, including firefighting vehicles and ambulances.
- (b) Where feasible and possible recommend new police procedures and records in the SI system, which would be mutually suitable to other Municipal Departments, Boards and Commissions, and generally acceptable to the public.
- (c) Plan, schedule and implement the use of the SI system of measurement in all measurement-sensitive police procedures.

**5.13 Terms of Reference for a Municipal Fire Department could be:**

- (a) Assess the impact of metric conversion on existing firefighting and fire prevention and department records.
- (b) Where feasible and possible, recommend new Fire Department procedures and records in the SI system which would be mutually suitable to other Municipal Departments, Boards and Commissions, and generally acceptable to the public.
- (c) Assess the need for equipment replacement required by the introduction of the SI system of measurement.
- (d) Plan, schedule and implement the use of the SI system of measurement in all measurement-sensitive areas of Fire Department procedures.

**5.14 Terms of Reference for a Transportation Commission could be:**

- (a) Assess the impact of metric conversion on the existing policy procedures related to passenger capacities, time schedules, terminal facilities, etc.
- (b) Where feasible, and possible, recommend revised schedules arising out of SI distance measurements.

**5.15** The Plan Summary and Bar Chart of Sector 1.04 (Road & Urban Transport) is attached as Appendix XII.

**5.16** Harbours involve planning and design of facilities for ships to discharge or receive cargo and passengers. These facilities include not only the harbour but its protection, if necessary, in the form of breakwaters; offshore moorings, marinas, structures within the harbour for mooring ships, port buildings, general cargo and bulk-cargo handling facilities, and many supplemental services.

**5.16.1** If a harbour is a commercial one, it will be provided with docks and the necessary facilities for the handling of cargo and the discharging of passengers. Municipal or government owned harbours, operated by port authorities in the form of harbour boards or commissions are not uncommon.

**5.16.2** *Terms of Reference of a Municipal Harbour Commission could be:*

- (a) Assess the impact of metric conversion on the planning and the design, construction and maintenance of a harbour and its many supplemental service requirements.
- (b) Assess the impact of metric conversion on the administration of the harbour and its facilities, the requirement for revisions to codes, standards, by-laws, and regulations relating to the harbour and its facilities, also quantities in tables and charts that are used as a basis for users' charges.
- (c) Establish and maintain effective communications with other organizations and associations involved in the preparation of, or administration of standards for harbour structures and facilities.
- (d) Prepare and implement a plan for the introduction of the SI system of measurement in respect of the foregoing items, keeping in mind the metric conversion of other Departments, Boards and Commissions, regardless of how remote a relationship may be.

**5.17** Civil airports may be developed through the local initiatives of individual communities and municipalities, with some assistance, possibly, from provincial and federal governments. Civil airports may serve scheduled airlines and general aviation.

**5.17.1** In addition to favourable physical characteristics of an airport site, there are factors of a general nature that have usually been given consideration, such as accessibility to the community which is measured in time rather than distance, availability of utilities, zoning to ensure protection of aerial approaches and the possibility of urban expansion in the vicinity of the airport.

**5.17.2** *Terms of Reference for the Airport Commission could be:*

- (a) Assess the impact of metric conversion on the planning for, the design, construction and maintenance of an airport and its many supplemental service requirements.
- (b) Assess the impact of metric conversion on the administration of the airport and its facilities, the requirement for revisions to codes, standards, by-laws and regulations relating to the airport and its facilities.

## Records

6.1

One of the most difficult questions that will be posed by metric conversion will be the matter of unconverted municipal records of all sorts. "Dead" records need not be converted, while the conversion of live records should be made largely on the basis of economics, and how much use will be made of these records during their lifetime, and what will be the cost of nuisance value of not converting them. The continuation of live records in customary units furthermore will pose problems of education and training, extra processing and an increased error factor. These are exactly the reverse of the anticipated benefits of metric conversion. The size of these problems varies directly with the volume of non-converted records and the volume of reference to them. It is suggested that:

- (1) All new municipal records created after the start of metric conversion be created in metric (SI) terms.
- (2) In general, historical and "dead" records need not be converted, but this suggestion could be reversed in specific cases if the cost and problems arising from non-conversion outweigh the cost of conversion.

6.2

Concerning the matter of converting property records in the area of municipal assessment is the fact many property titles will remain unchanged unless there is a change of ownership or mortgage on a particular property, following the implementation of metric conversion. Such a case should present a conversion problem only once, for the revised deed would be classified as a new property record created after the start of metric conversion, and should have been created in metric terms. Then, there is the Capital Gains Tax, which is based on the increase in the value of property and holdings between the date of sale following Valuation Day, December 1971. Real estate appraisals for valuation and possibly assessment, will be required to conform to the information available at the date of new appraisal and assessment, and perhaps for several months thereafter. Following the implementation of metric conversion any new appraisal and assessment would be in metric terms. On the other hand, a corresponding appraisal and assessment of 1971 would be in our present customary units. It would appear that the 1971 appraisal and assessment records would, therefore, require conversion to metric only once, and only at the time of new appraisal and assessment following metric conversion.

## Inter-related areas & key events

- 7.1** There are several areas of particular concern to both the general public and various Municipal Departments, Boards and Commissions in respect to metric conversion.
- 7.2 Road Sign Conversion**
- 7.2.1 Provincial authorities agreed to change all signs over a 30 day period in September 1977, both as to distance in kilometres (km) and speeds in kilometres per hour (km/h).
- 7.2.2 Municipal Traffic Departments would be well advised to coordinate their changing of road and street signs within the municipal jurisdiction to conform to provincial signing in SI units.
- 7.3** Extracts from the Plan Summary and Bar Chart of Sector 5.06 (Road Design, Construction & Operations) are attached as Appendix XIII.

### 7.4 Weighing and Measuring Devices

These are classified as follows:

#### 7.4.1 Industrial Scales

- 7.4.1.1 Today, both large and small industrial scales generally read in pounds, ounces and fractions of an ounce, pounds and fractions of pounds, thousands of pounds, while large units such as trucks or railroad scales may be related in tons and pounds.
- 7.4.1.2 Municipalities would be well advised to start now the planning for the metric conversion of the industrial scales within their individual and exclusive jurisdictions.

#### 7.4.2 Dispensing Fuel Oil and Gasolines

- 7.4.2.1 Presently fuel oil and gasoline dispensers read in gallons and tenths of a gallon (Imperial measure). It will be necessary to convert these to litres and tenths of a litre. Additionally, face plate markings will be required to be changed from "gallons" to "litres". Coordination is encouraged with the conversion plan of Sector 4.03 (Petroleum Refineries, Wholesalers and Gasoline).
- 7.4.2.2 Municipal garages would be well advised to determine from their suppliers when it will become necessary to convert their fuel oil and gasoline dispensers.

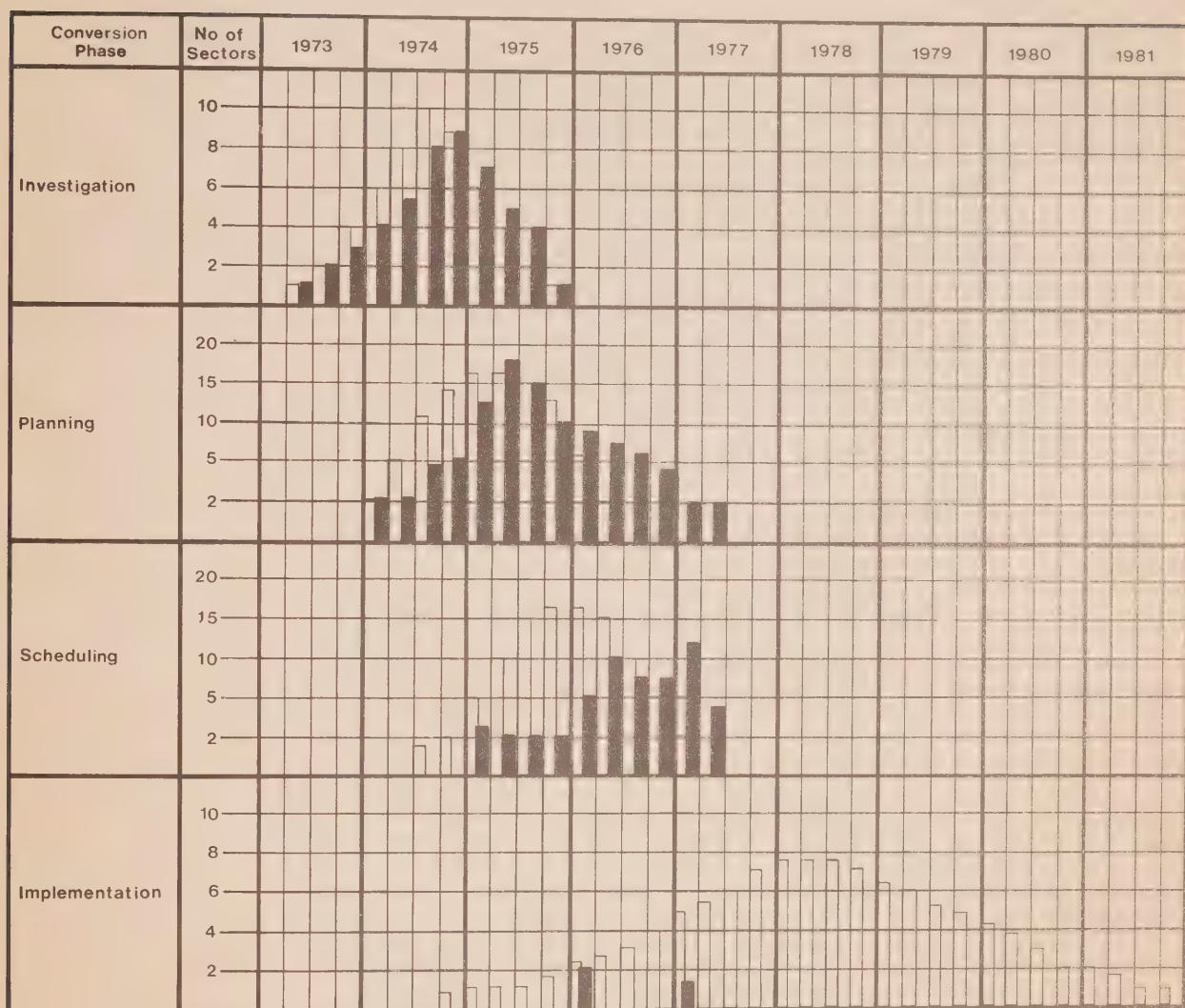
#### 7.4.3 Tire Inflation Gauges

- 7.4.3.1 These are highly visible and frequently used by the general public. At present they register pounds per square inch. On conversion the preferred units of registration will be kilopascals, or kPa in symbolic form. One pound per square inch is a little less than 7 kPa. A typical passenger car tire inflation pressure would be about 200 kPa. A useful reference document is the conversion plan of Sector 2.04 (Motor Vehicle & Parts Manufacturers).

## Appendix I

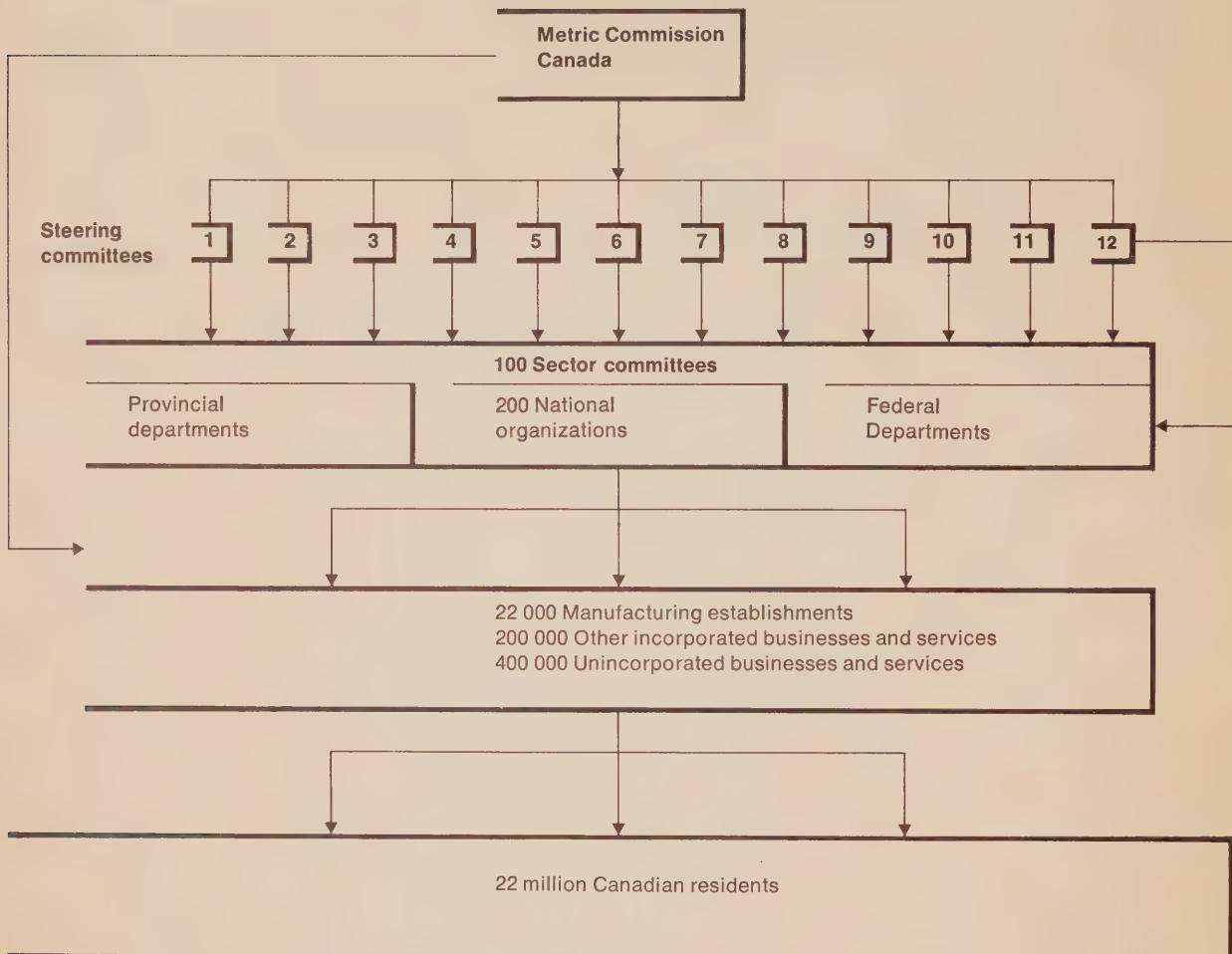
### The four phases of metric conversion in Canada

#### Sector progress report as of June 30, 1977



## Appendix II

Metric conversion  
information flow chart



## Appendix III

### Terms of reference

#### **Intergovernmental design & construction committee on metric conversion (IDCC)**

With respect to the metric conversion of design & construction within Federal, Provincial, and Territorial Governments this Committee shall

1. Organize studies necessary to determine and evaluate the factors involved in metric conversion in all those Federal, Provincial and Territorial departments or agencies having design and construction interests.
2. Coordinate the general plans for metric conversion programs within such departments or agencies and integrate these plans with the national program.
3. Create the environment in which metric conversion can be economically and effectively achieved throughout the design and construction sectors of the economy.
4. Maintain an effective liaison with the Construction Steering Committee of the Metric Commission and its Sector Committees.
5. Review recommendations or assumptions made by Steering or Sector Committees of the Metric Commission and provide such committees with specific recommendations concerning the metric conversion of design and construction.
6. Examine and report on the need for legislative changes or any other action by Federal, Provincial, and Territorial Governments that may be required to facilitate metric conversion in the public sector of the construction industry.
7. Act as an intergovernmental clearing house for enquiries and information concerning the metric conversion of design & construction.
8. Promote the use of rationalized metric dimensions in manufactured products and the principle of modular coordination in the design of facilities.
9. Provide effective representation on metric committees when requested and appropriate in order to further the objectives of the national conversion program.

## **Appendix IV**

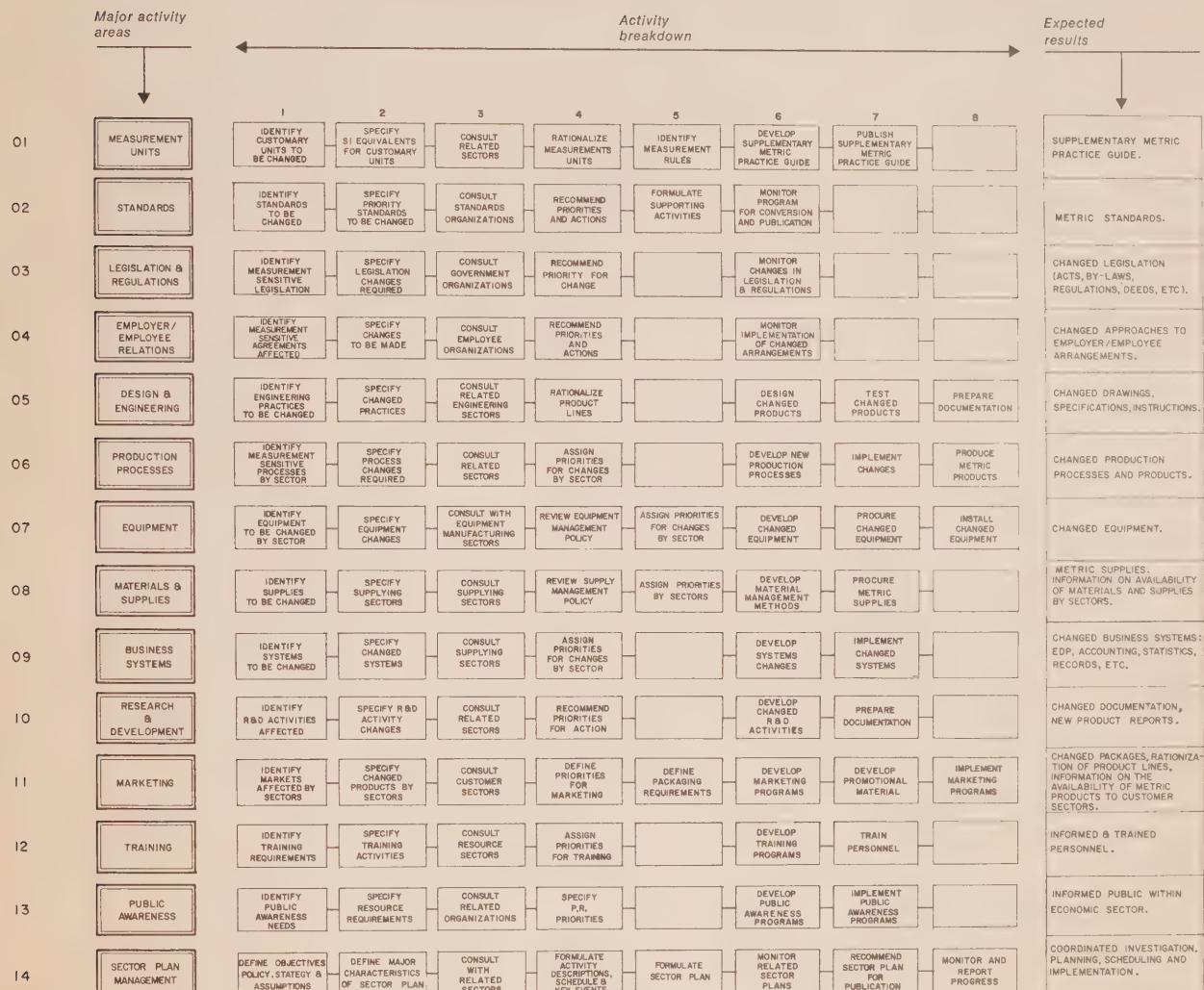
## **Steering and sector committee structure**

Date issued  
July 29, 1977  
by  
Research & Planning Directorate

This table is being updated  
every two months as necessary

# Appendix V

## Model of sector activity breakdown



### Concept:

This model is a generalized attempt to identify what is required to successfully achieve metric conversion (expected output for each major activity area) and how it is going to be done (activity breakdown). The activity breakdown

is the first step in the Planning Process. It identifies the main activities in a sector plan and puts them in logical sequence within each major activity area.

# Appendix VI

## Sector plan document production status report

SECTOR NO	STATUS		SECTOR TITLE	SECTOR NO	STATUS		SECTOR TITLE	SECTOR NO	STATUS		SECTOR TITLE
1.01	○	▲	E	STEERING COMMITTEE # 1	5.01	▲	E	F	X		STEERING COMMITTEE # 5
1.02	▲	▲		AIR TRANSPORT	5.02	▲	E		X		CONSTRUCTION
1.03	▲	▲		RAILWAY TRANSPORT	5.03	▲	E		X		NON-METALLIC MINERAL PRODUCTS
1.04	○	▲		ROAD & URBAN TRANSPORT	5.05	▲	E	F	X		STRUCTURAL & ARCHITECTURAL METALS
1.07	○	▲		METEOROLOGY	5.06	▲	E		X		REAL ESTATE, LAND SURVEYORS & TOWN PLANNERS
1.20	○	○		WORKING GROUP ON TARIFFS							ROAD DESIGN, CONSTRUCTION & OPERATIONS
1.30				WORKING GROUP ON TRANSPORTATION PACKAGING							
2.04	▲	▲	F	STEERING COMMITTEE # 2	61.01	▲	E		X		STEERING COMMITTEE # 6 - AGRICULTURE, FISHING, TRAPPING
2.05	▲	▲	E	INDUSTRIAL EQUIPMENT MANUFACTURERS	61.02	▲	E		X		BULK GRAIN HANDLING INDUSTRY
2.06	▲	▲	E	TRUCK BODY & TRAILER MANUFACTURERS	61.03	○			X		FEED INDUSTRY
2.07	○	▲		RAILROAD ROLLING STOCK	61.04	○			X		POULTRY
2.08	○	▲	F	SHIPBUILDING & BOATBUILDING	61.05	○			X		LIVESTOCK
2.10	○	▲	E	HEATING, VENTILATING-AIR COND.& FOOD SERVICE EQUIP.	61.06	○			X		HORTICULTURE
2.21	○			2.09 PLUMBER & HYDRO. HEATING	61.07				X		FISHING & FISH PRODUCTS
2.22	▲	▲	E	2.10 & 2.11 MACHINES & FOUNDRIES	61.08	▲	E		X		DAIRY FARMERS
2.23	▲	▲	F	2.11 FASTENERS INDUSTRY	61.09	○			X		SEED
2.24	▲	▲	E	METAL STAMPING, FORMING, PRESSING, COATING	61.10	△			X		TOBACCO FARMERS
2.25	▲	▲	T	CAN MANUFACTURERS					X		TOBACCO PRODUCTS
2.27				COOKWARE & HOUSEWARES							STEERING COMMITTEE # 62 - FOOD
2.31	▲	▲	E	TOOLS & MEASURING DEVICES	62.02						CONFECTIIONERY
2.32	▲	▲	E	INDUSTRIAL & HOME HARDWARE	62.03	○					MEAT PACKERS
2.33	○	▲	O	FIRE FIGHTING EQUIPMENT, MISCELLANEOUS MACHINERY & EQUIPMENT	62.04	▲	E				DAIRY PROCESSORS
2.34	▲	▲	E	CONSTRUCTION & AGRICULTURAL EQUIPMENT	62.05	○					FOOD PROCESSORS
				MACHINERY & FLUID POWER	62.06	○					PET FOODS
				MATERIALS & MOULDING - MACHINE SHOPS -	62.07	○					BISCUITS
				TOOL & DIE SHOP - CUTTING TOOLS	62.08	○					EDIBLE OILS
				RECREATIONAL, LEISURE PRODUCTS, OFF-ROAD VEHICLES -	62.09	○					SUGAR
				SMAL ARMS, PLEASURE CRAFT	62.10	△					BAKERS
					62.11	○					TEA & COFFEE
					62.12	○					MILLERS
					62.13	○					COLD CEREALS
					62.21	○					HOT CEREALS
					62.22	△					-SPICES, EXTRACTS & FOOD COLOURING
					62.23	○					COLD BEVERAGE, MIXES & DRY DESSERT MIXES
					62.24	○					CHOCOLATE, DRINKS & COCOA POWDER
					62.25	○					PASTA PRODUCTS
					62.26	○					BAKING MIXES
					62.27	○					SNACK FOODS
					62.28	△					RICE
					62.29	○					WORKING GROUP ON PACKAGING
					62.50	○					
3.01	▲	▲	E	STEERING COMMITTEE # 3	STEERING COMMITTEE # 4						
3.02	▲	▲	T	RADIO, TELEVISION, COMMUNICATION, ELECTRONIC EQUIPMENT & PARTS							
3.03	▲	▲	E	AIRCRAFT & AIRCRAFT PARTS MANUFACTURERS							
3.04	▲	▲	T	BUSINESS MACHINES, SCIENTIFIC & PROFESSIONAL EQUIP.							
3.05	▲	▲	E	COMMUNICATIONS							
3.06	▲	▲	F	TELEPHONE POWER							
3.07	▲	▲	E	RUBBER PRODUCTS							
3.08	▲	▲	T	CHEMICALS & CHEMICAL PRODUCTS							
3.09	▲	▲	E	PLASTICS INDUSTRY							
3.10	▲	▲	E	WORKING GROUP ON SCALES IN THE RETAIL FOOD INDUSTRY							
4.01	○	▲	E	STEERING COMMITTEE # 4							
4.02	▲	▲	E	MINES							
4.03	▲	▲	E	PETROLEUM & NATURAL GAS INDUSTRY & SERVICES							
				PETROLEUM REFINERIES, WHOLESALERS & GASOLINE SERVICE STATIONS							
				NATURAL GAS DISTRIBUTION & TRANSPORT							
				NON-FERROUS METALS							
4.04	▲	▲	E		STEERING COMMITTEE # 63 - BEVERAGES						
4.05	○	▲	E		63.01	○					DISTILLED SPIRITS
					63.02	○					BRWLERIES
					63.03	○					SOFT DRINKS
					63.04	▲	E				WINE
					63.05	○					LICOR COMMISSIONERS
					63.06	○					MINERAL WATER PRODUCERS
					63.07	○					FRUIT JUICE INDUSTRY
					63.08	○					CIDER
											STATUS LEGEND
											▲ PLAN APPROVED BY METRIC COMMISSION CANADA
											△ PLAN RECOMMENDED TO STEERING COMMITTEE
											○ PLANNING IN PROGRESS
											■ ENGLISH TEXT PRINTED
											■ FRENCH TEXT PRINTED
											■ ENGLISH TEXT TRANSLATED
											SECTION STRUCTURE APPROVED BY METRIC COMMISSION SEPT. 15, 1976 (REV. JUNE 22, 1977)

Date issued  
July 29, 1977  
by  
Research & Planning Directorate

This table is being updated  
every two months as necessary

## Appendix VII

<b>Chairman</b> C. M. Bolger 995-6457	<b>Metric Commission Canada</b> August 1977		
<b>Executive Director</b> P. C. Boire 995-6458	Assistant to the Executive Director F. S. Symons		992-7100
<b>Director, Engineering Industries Plans</b> F. Dugal 996-7996 995-0270	Steering Committee 1. 2. 3. 4. 5.	Sector Plan Managers H. Dow B. J. Wassink 2.08, 2.09, 2.22, 2.23, 2.34, 2.24, 3.10 R. Bright 2.10, 2.11, 2.21, 2.25, 2.32, 2.33 R. Halé 2.04, 2.05, 2.06, 2.07, 2.27, 2.31 G. Swain 3.01, 3.02, 3.05, 3.06 J. Trottier 3.03, 3.04, 3.07, 3.08, 3.09 C. A. Rockbourne I. Friedman B. J. Wassink	996-7996 996-7996 996-7996 996-7996 995-0272 995-0272 996-7996 996-7996
► <b>Assistant Director</b> N. Ganapathy 996-7996 995-0270	Working Group on Retail Scales		
<b>Director, Industry &amp; Services Plans</b> W. S. Volk 996-8553	Steering Committee 61. 62. 63. 7. 8. 9.	Sector Plan Managers B. C. Craig B. R. Morin B. C. Craig P. Alfers J. Earle J. Bennett (9.10, 9.21, 9.22, 9.50) R. J. Deachman (9.30, 9.40, 9.60, 9.70) G. Gulas	996-8553 996-8553 996-8553 996-8553 996-8553 996-8553 996-8553 996-8553
► <b>Assistant Directors</b> G. Gulas 996-8553 P. Melnichuk 996-8553	WG Packaging		
<b>Director, Intergovernmental Coordination</b> 995-8404 992-4162	Steering Committee 10.	G. Desbarats, Sector Plan Manager H. Fuhrer, Training N. Paynter, Finance & Admin. Officer M. Brandt, Translation Coordinator	995-8404 995-8404 995-8404 995-0270
► <b>Director, Information</b> B. Philcox 593-6800	V. J. Pelisek C. Guay R. Wood D. Vermette-Gagné A. Paton L. Quinty J. S. Martin E. Ackland C. Patton	Assistant Director Public Relations Manager Media Relations Manager Publishing Manager Publications Coordinator, English Publications Coordinator, French Speakers' Bureau Coordinator Exhibits Coordinator Enquiries Supervisor	593-6800 593-6800 593-6800 593-6800 593-6800 593-6800 593-6800 593-6800 596-4000
► <b>Director, Research &amp; Planning</b> F. W. Buser 996-8584	J. E. Berry B. F. Dreyer G. A. E. Ecclestone E. Sparkes K. Talwar	Planning Manager Planning Manager Planning Manager Planning Manager Planning Manager	996-8584 995-2294 995-2294 995-2294 995-2294
<b>Assistant Director</b>	C. Boisvert K. Rubin	Planning Manager Research Manager	995-2294 995-2294

## Appendix VIII

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### Terms of reference for a metric conversion officer

Title: Metric Conversion Officer

Relationship:

Responsible to the President

Scope: Introduction of working to metric standards within the company.

Resources:

Revenue apportionment from departments, and capital expenditure limits as agreed.

Key Result Areas:

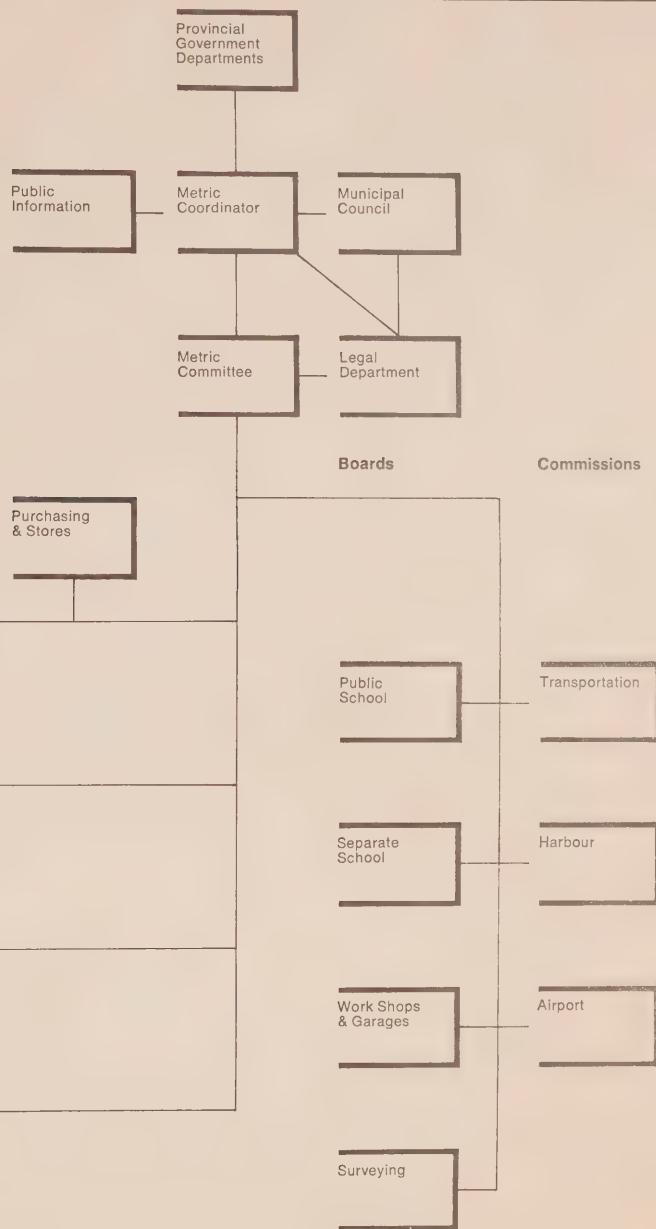
1. Preparation of an investigation report
2. Preparation of a plan to introduce metric working and standards to the company.
3. Comparison with schedules of relevant sector plans
4. Successful implementation of the plan.

Specific Objectives:

1. To work as the executive officer of the metric conversion team (committee) in investigating, planning, scheduling and implementing a course of action for the company to change from imperial to metric standards of weights and measures, consistent with:
  - (a) the program of guideline dates recommended by Metric Commission Canada
  - (b) the requirements of the company's customers.
  - (c) the availability of raw materials and equipment.
2. To assist each department to identify its needs in relation to the change and to formulate a departmental plan based on those needs and consistent with the overall company plan.
3. To act as a single authoritative source of all information on metric matters relevant to the company, and to disseminate information to all departments when required in the programme.
4. To coordinate the scheduling of all activities involved in making the change to metric standards.
5. To present a written report on progress to the President, monthly.

# Appendix IX

## Suggested organization for municipal metric conversion



## Appendix X

### Sector 5.05 Plan Summary

**Real Estate**  
**Land Surveyors**  
**Town Planners**

Sector 5.05, officially known as Real Estate, Land Surveyors and Town Planners, also includes the Appraisal, Urban Development and Landscape Architects segments.

The plan as summarized by the bar chart is a composite plan and therefore of a general nature rather than containing specific details relating to the various groups composing the Sector. Nevertheless, the plan is a framework from which Sector components can prepare detailed conversion plans.

The Sector Plan has been developed in accordance with the Four-Phase Program of Guideline Dates for Metric Conversion in Canada. The four phases are the Investigation phase, the Planning phase, the Scheduling phase, and the Implementation phase.

Sector 5.05 is striving to maximize the benefits of conversion by standardizing and rationalizing the applicable measurement practices across Canada.

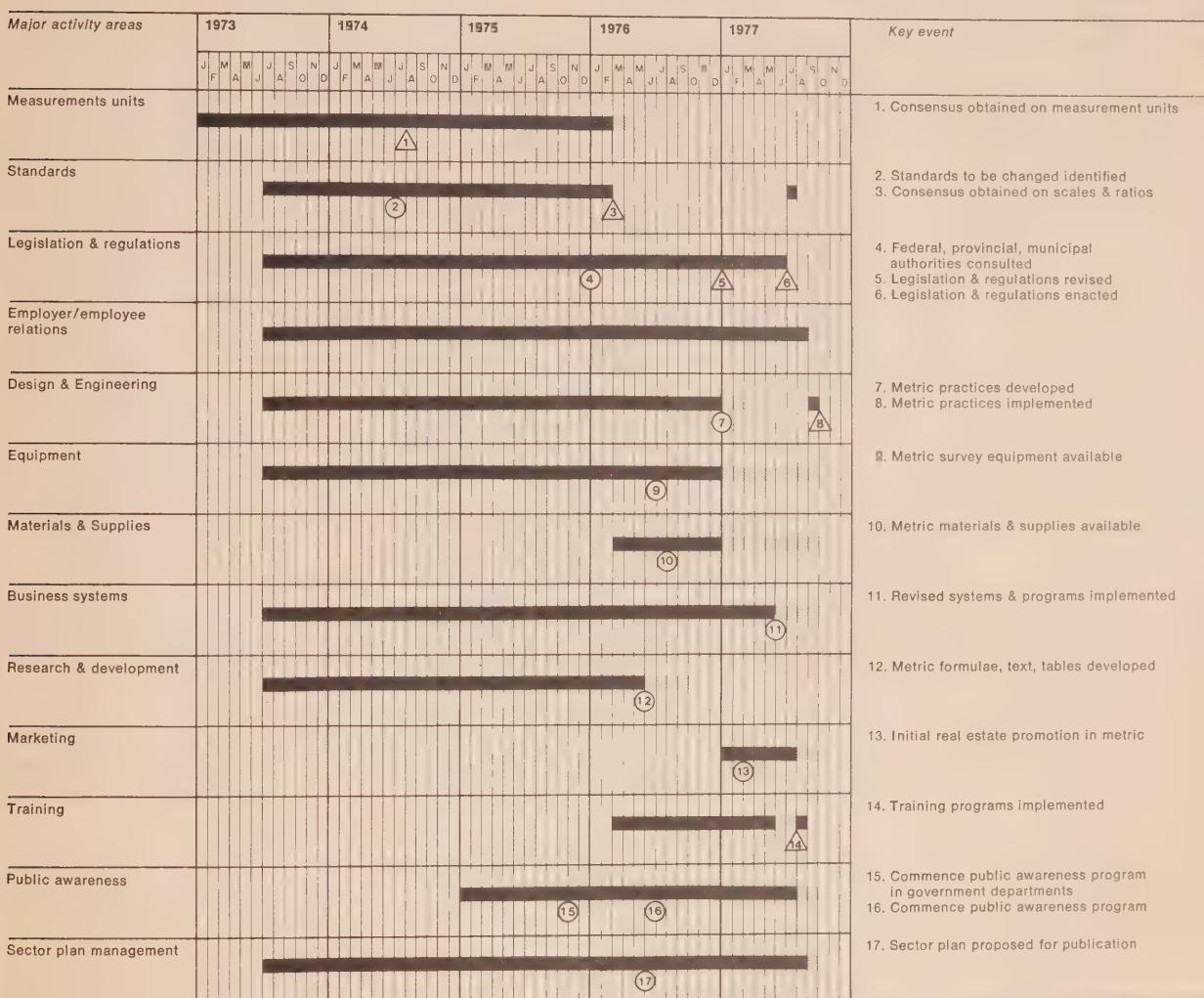
To allow site plans to be prepared in metric for construction projects that will be awarded after 'M' Day, Sector 5.05 has prepared a plan which calls for registration of Land Titles in metric sufficiently in advance of this date. For Sector 5.05, Construction 'M' Day is also the day after which real estate will begin to be marketed in metric terms. The impact of this combined effort, with the focus of 'M' day and a short transition period, will provide a substantial impetus to the overall Conversion Program in Canada.

Legislative changes at the three levels of government have been identified as a key event in the Sector Plan and it is important that the schedule for these changes be met. Federal and Provincial statutes having measurement sensitive clauses and related to Sector 5.05 are being identified, listed in order of priority with respect to timing and passed to the applicable responsible government bodies.

The major portion of legislative changes related to Sector 5.05 are within the jurisdiction of the Provinces and Municipalities. The Sector Committee, at a meeting on 6 November 1975, passed the following resolution:

"Whereas the Government of Canada, supported by the provincial governments, has accepted the need for the universal use of SI metric system throughout Canada, and, whereas it is necessary for legal surveys to commence at least one year in advance of that date, be it resolved that all provincial legislation, ownership, use and occupancy of land be amended no later than January 1st 1977 and enunciated no later than July 1st 1977."

## **Bar chart Sector 5.05 Real Estate, Land Surveyors, Town Planners**



### *Legend*

#### ▲ Key event on critical path

### Key event with float

Earliest Start   Earliest Finish   Latest Finish

Sector 5.05  
Real estate,  
land surveyors,  
town planners  
Orig. Date: Feb. 13/76  
Issue 6: Aug. 11/76

## Appendix XI

### Sector 5.01 Plan Summary Construction

Sector 5.01 in agreement with other allied sectors has developed the following concept: "M-Day, January 1, 1978, is the first day of Metric Construction Year in which the Canadian construction industry will work mainly in the SI system. Following M-Day, drawings and specifications, material and components which are necessary in metric terms will become available."

#### Standards

Standards which require conversion so that the construction industry can adopt metric practice have been identified and priority for their conversion established. To date the conversion of high priority standards has been achieved.

#### Legislation

The re-drafting and enactment of applicable legislation is potentially critical. Means have been set up within the sector committee to monitor the legislative conversion process for ensuring corrective action prior to potential delays. The plan calls for enactment of applicable legislation by July 1977.

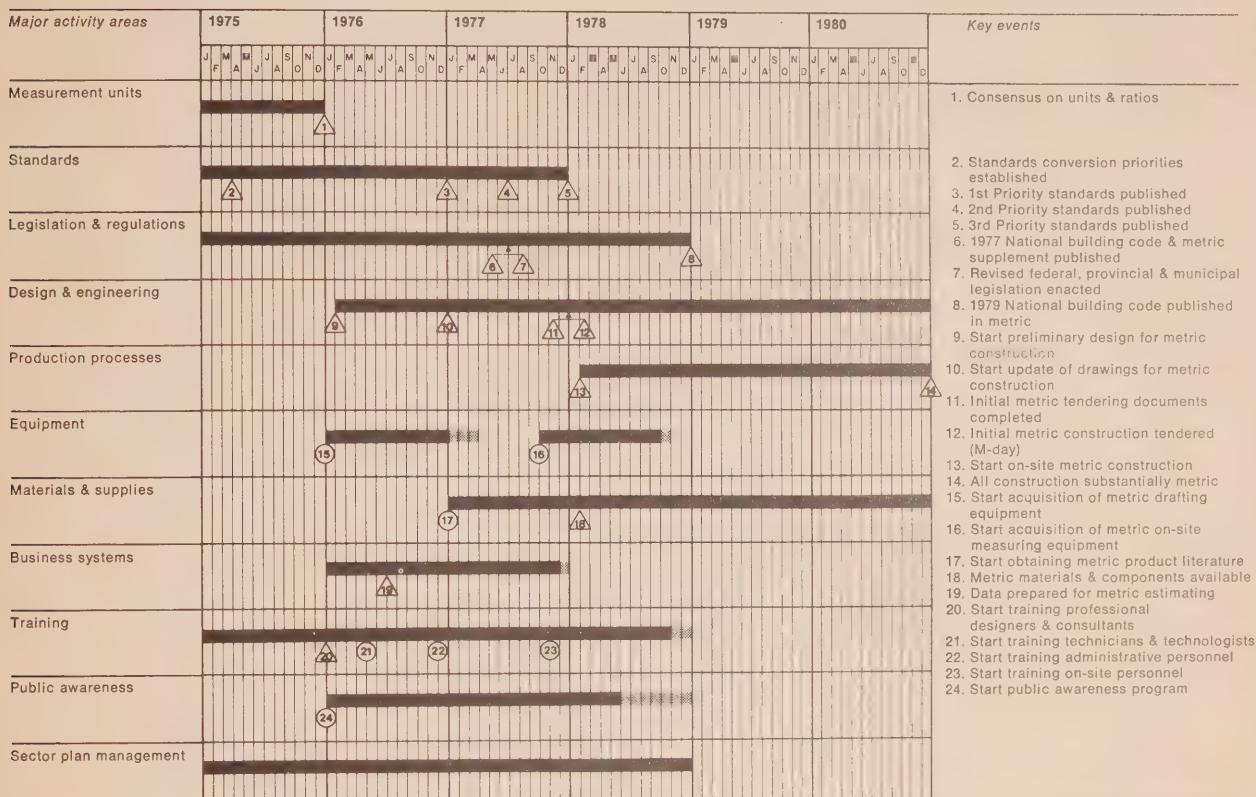
A decision was made to adopt the 100 mm module and metric dimensions are to be multiples of this module, such as 1200 mm x 2400 mm for panel components. Work is continuing for rational standardization of dimensions for many construction materials, components and equipment.

Preparation of essential metric trade literature and design aids is scheduled to begin in 1977 with additional data to follow as soon as budgets for computation, translation and printing permit.

The construction industry plan is based on the understanding that manufacturers will produce the metric components considered essential for projects designed in metric to enable on-site construction M-day, 1 January 1978.

This plan has been endorsed by departments of federal and provincial governments and new building construction work initiated by these authorities will be encouraged to be in metric (SI).

**Bar chart Sector 5.01  
Construction**



*Legend*

- ▲ Key event on critical path
- Key event with float

Earliest Start   Earliest Finish   Latest Finish

Sector 5.01  
Construction  
Orig. date: Aug 15/75  
Issue 9: June 18/76

## Appendix XII

### Sector 1.04 Plan Summary Road And Urban Transport

Sector Committee 1.04 has prepared this plan as a guide for the Road and Urban Transport Industry whereby substantially metric operations can be achieved throughout the industry by July 1980. The format and methodology of the plan is that recommended by Metric Commission Canada and the overall time-frame of conversion conforms with the National Program of Guideline Dates For Metric Conversion.

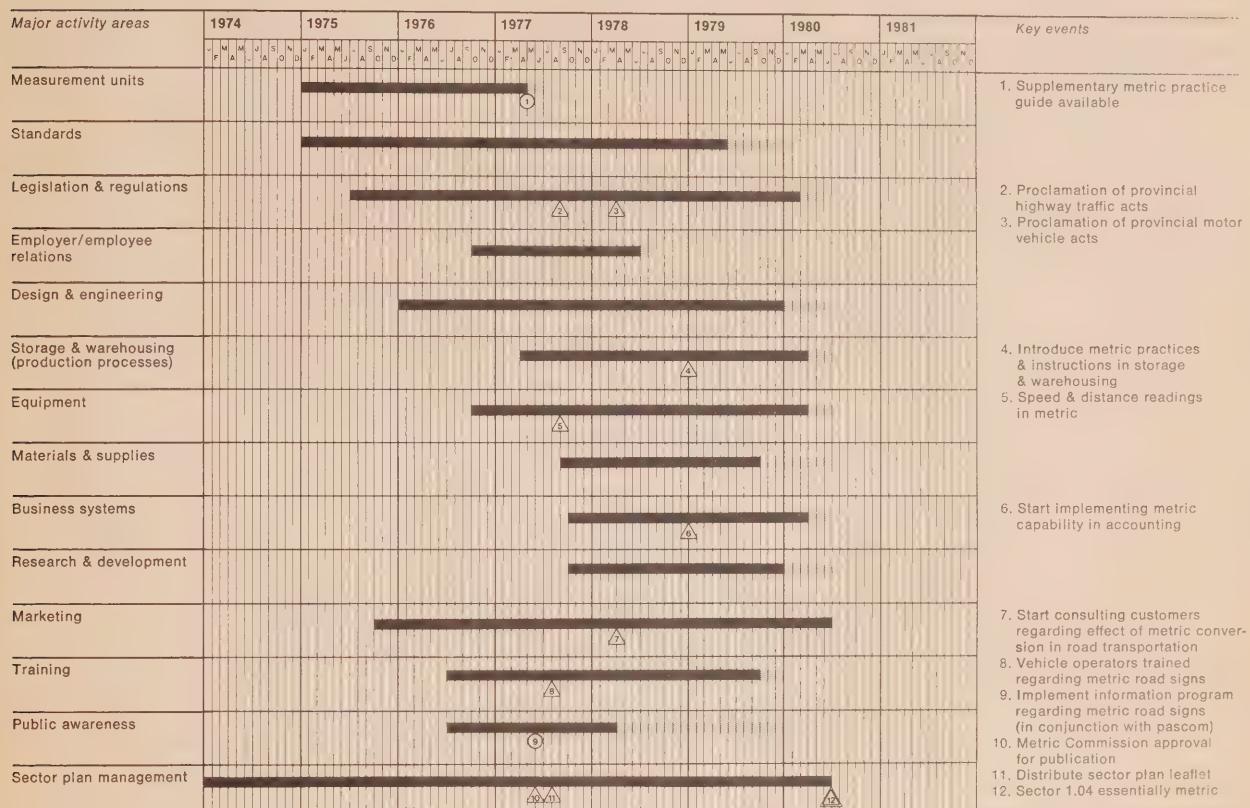
The plan provides the details of the various conversion activities and the broad timing for implementation in each activity area. There is one major dependency in the plan, that being the conversion of tariffs which is the responsibility of Sector 1.20, Working Group on Tariffs, and close liaison must be maintained with this sector to ensure converted tariffs are available for filing and implementation as required.

The first and one of the most important steps in the conversion program is the operation of vehicles in metric units for speeds and distance in September 1977. This conversion of road signs by Sector 5.06, Road Design, Construction and Operations, is highlighted on the Network Diagram as Intersectoral Event No. 0001. This event has necessitated special activity to modify road equipment and to train operators in preparation for September 1977, this date being well ahead of the timing of equipment modification and personnel training for the remainder of the conversion plan.

Being a service industry, Road and Urban Transport reacts to customer demands and therefore the requirements to provide metric services will be dictated by the customers. Further, owing to the many diverse types of operations the demand for metric services from individual customers will vary over a period of two years or more, and on services to and from United States will not occur until after the 1980 conversion date.

In order that individual companies can react to this variable situation with a minimum of difficulty it is necessary to have a well coordinated conversion program throughout the industry. Sector Committee 1.04 recommends that all organizations and companies within Road and Urban Transport should formulate their own plans within the framework of this sector plan and work in concert to achieve an orderly conversion program.

## **Bar chart Sector 1.04 Road & Urban Transport**



### Legend

- △ Key event on critical path
  - Key event with float

Earliest Start – Earliest Finish | Latest Finish

Sector 1.04  
Road &  
Urban Transport  
Orig. date: Mar. 28/77  
Issue 2: April 21/77

## Appendix XIII

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### Sector 5.06 Plan Summary Road Design, Construction & Operations

**Key      June 1, 1977**

**Events:** Metric material and supplies required for highway operational activities.

**August 1, 1977**

Major 30-day national public awareness and driver education campaign on metric speed limit begins.

**September 30, 1977**

Completion of posting of metric speed and distance signs. Enforcement commences.

**April 1978**

Actual registration of commercial vehicles takes place.

**Section II:**

Highway design and construction activities with a target completion date of April 1979.

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**Key      October 1977**

**Events:** Start of metric highway design.

**April 1, 1979**

Call for highway construction tenders in SI

The primary objective of Sector 5.06 is to achieve the greatest possible benefit from the conversion process as soon as possible and at the least cost, confusion, or inconvenience to the road and highway engineering organizations, other related sectors, and the general public.

To this end, it is considered important to the national interest that individual highway engineering organizations act in unison with respect to the form and timing of the conversion process and that the entire activity be completed within the published guideline dates.

Responsibility for preparing a detailed conversion plan to its own needs rests with each individual, federal, provincial, and municipal jurisdiction. It is agreed, however, as a matter of policy, that insofar as practical, all jurisdictions will work towards completing certain designated key activities at the same time so that the 5.06 plan becomes the national plan for Canada.

Sector 5.06, therefore, encourages building and construction material suppliers to carry out a hard conversion of their products and is prepared to provide a market for such materials.

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## **Bar Chart Sector 5.06**

### **Road Design & Operations**

Major activity areas	1972	1973	1974	1975	1976	1977	1978	1979	Key events
	J J F M M A J A O D F	J J M M A J A O D F							
Measurement Units						▲			1. Metric Practice Guide Published
Standards									2. Posted speed limit & commercial vehicle registration introduced
Legislation & Regulations						②	③	④	3. Metric speed limits effective 4. Commercial vehicle metric registration effective 5. RTAC geometric design manual converted
Employer/Employee Relations									6. Start of metric highway design 7. Call for highway construction tenders in SI
Design & Engineering						△	△	△	8. Speed and distance road signs converted
Production Processes							⑥	⑨	9. Commercial motor vehicle registration in metric
Equipment									10. Required metric operations materials and supplies available
Materials & Supplies					■		⑩	⑪	11. Required metric construction and maintenance materials and supplies available
Business Systems		■							12. Operations personnel trained 13. Designers and draughtsmen trained 14. Field personnel trained
Training			■				⑫	⑬	15. Major public awareness campaign on metric speeds and distances begins
Public Awareness				■			⑮		16. RTAC plan approved by authorities having jurisdiction 17. Sector plan approved for publication by M.C.
Sector Plan Management					■	△		△	18. Highway design, construction, operations and maintenance converted fully metric

### *Legend*

- △ Key event on critical path
  - Key event with float

Earliest start   Earliest finish   Latest finish

Sector 5.06  
Road design  
and operations  
Orig. date: May 18/76  
Issue 4: Aug 11/76

## Appendix XIV

Relevant Publications and References	
1. White Paper on Metric Conversion in Canada	DSS Bookstore Hull, 1970
2. The International System of Units (SI) — CAN3-Z234.2-76	Canadian Standards Association, Rexdale, Ontario, 1976
3. Canadian Metric Practice Guide — CAN3-Z234.1-76	Canadian Standards Association, Rexdale, Ontario, 1976
4. Information Summary of Conversion Plans for: - Sector 5.01 Construction - Sector 5.02 Non-Metallic Mineral Products - Sector 5.05 Real Estate, Land Surveyors & Town Planners - Sector 5.06 Road Design, Construction & Operations - Sector 1.04 Road & Urban Transport - Any other sectors of specific interest to the municipal conversion officer	Metric Commission Canada, Ottawa, 1976 Metric Commission Canada, Ottawa, 1977 Metric Commission Canada, Ottawa, 1977 Metric Commission Canada, Ottawa, 1976 Metric Commission Canada, Ottawa, 1977 Metric Commission Canada, Ottawa, 1977
5. How to Launch Metric Conversion in Your Organization	Metric Commission Canada, Ottawa, 1975
6. How to Plan Metric Conversion in Your Organization	Metric Commission Canada, Ottawa — under preparation
7. Bibliography on Metric Conversion	Metric Commission Canada, Ottawa, 1977
8. Metric Monitor	Metric Commission Canada, Ottawa (monthly)
9. Consensus	Standards Council of Canada (monthly)

For further information, please contact your provincial Department of Municipal Affairs.



